Listing of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-60 (previously canceled)

61-84 (canceled herein)

85. (new) A method of identifying whether a candidate compound is a modulator of cardioprotection, comprising the steps of:

(a) contacting the candidate compound with a GPCR, said receptor comprising an amino acid sequence selected from the group consisting of:

(i) the amino acid sequence of SEQ ID NO:2;

(ii) amino acids 2-433 of SEQ ID NO:2;

(iii) the amino acid sequence of SEQ ID NO:3;

(iv) amino acids 2-433 of SEQ ID NO:3;

(v) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction (PCR) on a human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8; and

(vi) the amino acid sequence of SEQ ID NO:5;

or a fragment or variant thereof, wherein the receptor couples to a G protein; and

(b) determining whether the receptor functionality is modulated;

wherein a change in receptor functionality is indicative of the candidate compound being a modulator of cardioprotection.

86. (new) A method of identifying whether a candidate compound is a modulator of a **RUP41** GPCR, said receptor comprising an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:2;

(b) amino acids 2-433 of SEQ ID NO:2;

(c) the amino acid sequence of SEQ ID NO:3;

(d) amino acids 2-433 of SEQ ID NO:3;

(e) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction (PCR) on a human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8; and

(f) the amino acid sequence of SEQ ID NO:5;

or a fragment or variant thereof, wherein the receptor couples to a G protein;

comprising the steps of:

(a') contacting the candidate compound with the receptor; and

(b') determining whether the receptor functionality is modulated;

wherein a change in receptor functionality is indicative of the candidate compound being a modulator of said GPCR.

87. (new) The method of claim 86, wherein the candidate compounds are screened as pharmaceutical agents for the prevention or treatment of a cardiovascular disorder, for the prevention or treatment of an ischemic heart disease, or for effecting a change in cardiovascular function.

88. (new) A method of identifying whether a candidate compound is an agonist of a **RUP41** GPCR for use as a pharmaceutical agent for the prevention or treatment of a cardiovascular disorder, for the prevention or treatment of an ischemic heart disease, or for effecting a change in cardiovascular function, said receptor comprising an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:2;

(b) amino acids 2-433 of SEQ ID NO:2;

(c) the amino acid sequence of SEQ ID NO:3;

(d) amino acids 2-433 of SEQ ID NO:3;

(e) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction (PCR) on a

human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8; and

(f) the amino acid sequence of SEQ ID NO:5;

or a fragment or variant thereof, wherein the receptor couples to a G protein;

comprising the steps of:

(a') contacting the candidate compound with the receptor; and

(b') determining whether the receptor functionality is stimulated;

wherein stimulation of receptor functionality is indicative of the candidate compound being an agonist of said GPCR for use as a pharmaceutical agent for the prevention or treatment of a cardiovascular disorder, for the prevention or treatment of an ischemic heart disease, or for effecting a change in cardiovascular function.

89. (new) The method of claim 88, wherein the cardiovascular disorder is selected from the group consisting of:

(a) reduced cardiac output; and

(b) increased venous pressures.

90. (new) The method of claim 88, wherein the ischemic heart disease is selected from the group consisting of:

(a) myocardial infarction;

(b) post-myocardial infarction remodeling; and

(c) congestive heart failure.

91. (new) The method of claim 88, wherein the change in cardiovascular function is selected from the group consisting of:

(a) a decrease in cardiac hypertrophy;

(b) an increase in cardiac ejection volume;

(c) a decrease in ventricular chamber volume; and

(d) a decrease in cardiomyocyte apoptosis.

92. (new) The method of claim 85, wherein said receptor is recombinant.

93. (new) The method of claim 85, wherein said determining is through the measurement of the level of a second messenger selected from the group consisting of cyclic AMP (cAMP), cyclic GMP (cGMP), inositol triphosphate (IP_3), diacylglycerol (DAG) and Ca^{2+}.

94. (new) The method of claim 93, wherein the intracellular level of cAMP is reduced.

95. (new) The method of claim 85, wherein said determining is through the use of a Melanophore assay, through the measurement of GTPγS binding to a membrane comprising said GPCR, or through the use of a Gq(del)/Gi fusion construct assay.

96. (new) The method of claim 85, further comprising the step of comparing the modulation of the receptor caused by the candidate compound to a second modulation of the receptor caused by contacting the receptor with a known modulator of the receptor.

97. (new) A process for making a modulator of a **RUP41** GPCR, comprising the steps of:

(a) identifying said modulator of the **RUP41** GPCR; and

(b) synthesizing the modulator identified in (a).

98. (new) A modulator identified according to a method of any one of claims 85 to 88.

99. (new) The modulator of claim 98 wherein said modulator is selected from the group consisting of agonist, partial agonist, inverse agonist and antagonist.

100. (new) The modulator of claim 98 wherein said modulator reduces the intracellular level of cAMP.

101. (new) A method of modulating the activity of a **RUP41** GPCR, said receptor comprising an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:2;

(b) amino acids 2-433 of SEQ ID NO:2;

(c) the amino acid sequence of SEQ ID NO:3;

(d) amino acids 2-433 of SEQ ID NO:3;

(e) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction (PCR) on a human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8; and

(f) the amino acid sequence of SEQ ID NO:5;

or a fragment or variant thereof, wherein the receptor couples to a G protein, comprising the step of contacting the receptor with a modulator of claim 98.

102. (new) The method of claim 101 wherein said contacting comprises administration of the modulator to a membrane comprising the receptor, to a cell or tissue comprising the receptor, or to an individual comprising the receptor.

103. (new) A method of preparing a composition, comprising identifying a modulator of a **RUP41** GPCR and then admixing a carrier and the modulator.

104. (new) A pharmaceutical or physiologically acceptable composition comprising, consisting essentially of, or consisting of a modulator of claim 98.

105. (new) A method of cardioprotection, of preventing or treating a cardiovascular disorder, of preventing or treating an ischemic heart disease, or of effecting a change in cardiovascular function comprising administering to an individual in need thereof said pharmaceutical or physiologically acceptable composition of claim 104.

106. (new) The method of claim 105 wherein the cardiovascular disorder is selected from the group consisting of:

(a) reduced cardiac output; and

(b) increased venous pressures.

107. (new) The method of claim 105 wherein the ischemic heart disease is selected from the group consisting of:

(a) myocardial infarction;

(b) post-myocardial infarction remodeling; and

(c) congestive heart failure.

108. (new) The method of claim 105 wherein the change in cardiovascular function is selected from the group consisting of:

(a) a decrease in cardiac hypertrophy;

(b) an increase in cardiac ejection volume;

(c) a decrease in ventricular chamber volume; and

(d) a decrease in cardiomyocyte apoptosis.

109. (new) The method of claim 105 wherein said individual is a mammal.

110. (new) A method of making a knockout mouse or rat, wherein said knockout mouse or rat is predisposed to:

a cardiovascular disorder selected from the group consisting of reduced cardiac output and increased venous pressures; or

an ischemic heart disease selected from the group consisting of myocardial infarction, post-myocardial infarction remodeling and congestive heart failure;

comprising the step of knocking out a mouse gene encoding the polypeptide of SEQ ID NO:5, or knocking out a rat gene hybridizing at high stringency to the polynucleotide of SEQ ID NO:6.

111. (new) The knockout mouse or rat according to claim 110.

112. (new) A method of using the knockout mouse or rat of claim 111 to identify whether a candidate compound has therapeutic efficacy for the prevention or treatment of a

cardiovascular disorder or an ischemic heart disease, comprising the step of administering or not administering the compound to the mouse or rat.

113. (new) An isolated rat **RUP41** polynucleotide selected from the group consisting of:

(a) a polynucleotide comprising a contiguous span of at least 75 nucleotides of SEQ ID NO:6;

(b) a polynucleotide comprising a contiguous span of at least 150 nucleotides of SEQ ID NO:6:

(c) a polynucleotide comprising a contiguous span of at least 250 nucleotides of SEQ ID NO:6;

(d) a polynucleotide comprising a contiguous span of at least 350 nucleotides of SEQ ID NO:6; and

(e) a polynucleotide comprising a contiguous span of at least 500 nucleotides of SEQ ID NO:6;

or the complement thereof.

114. (new) A recombinant vector, said recombinant vector comprising the isolated polynucleotide of claim 113.

115. (new) A host cell comprising the recombinant vector of claim 114.

116. (new) A GPCR Fusion Protein construct comprising a constitutively active G-protein coupled receptor and a G protein, said receptor comprising a **RUP41** amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:2;

(b) amino acids 2-433 of SEQ ID NO:2;

(c) the amino acid sequence of SEQ ID NO:3;

(d) amino acids 2-433 of SEQ ID NO:3;

(e) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction (PCR) on a

human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8; and

(f) the amino acid sequence of SEQ ID NO:5;

or a fragment or variant thereof.

117. (new) A method of identifying whether a candidate compound is a ligand of a **RUP41** GPCR, said receptor comprising an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:2;

(b) amino acids 2-433 of SEQ ID NO:2;

(c) the amino acid sequence of SEQ ID NO:3;

(d) amino acids 2-433 of SEQ ID NO:3;

(e) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction PCR on a human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8; and

(f) the amino acid sequence of SEQ ID NO:5;

or a fragment or variant thereof, comprising the steps of:

(a') contacting said receptor with an optionally labled known ligand to the receptor in the presence or absence of said candidate compound;

(b') detecting the complex between said known ligand and said receptor; and

(c') determining whether less of said complex is formed in the presence of the candidate compound than in the absence of the candidate compound;

wherein said determination is indicative of the candidate compound being a ligand of said receptor.

118. (new) A method of radioimaging, comprising providing or administering to an individual in need of said radioimaging a radiolabeled compound, wherein the compound is a modulator of a **RUP41** GPCR or a ligand of a **RUP41** GPCR.

119. (new) The method of claim 118 for use in identifying an individual at risk for or progressing toward ischemic heart disease.

120. (new) A non-human mammal transgenic for a human **RUP41** GPCR, said receptor comprising an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:2;

(b) amino acids 2-433 of SEQ ID NO:2;

(c) the amino acid sequence of SEQ ID NO:2 wherein the phenylalanine at amino acid position 312 of SEQ ID NO:2 is substituted with lysine;

(d) the amino acid sequence of SEQ ID NO:3;

(e) amino acids 2-433 of SEQ ID NO:3;

(f) the amino acid sequence of SEQ ID NO:3 wherein the phenylalanine at amino acid position 312 of SEQ ID NO:3 is substituted with lysine; and

(g) the amino acid sequence of a G protein-coupled receptor encoded by a polynucleotide that is amplifiable by polymerase chain reaction (PCR) on a human DNA sample using sequence specific primers SEQ ID NO:7 and SEQ ID NO:8.

121. (new) A method of using the transgenic non-human mammal of claim 120 to identify whether a compound has efficacy for cardioprotection, wherein the compound is a modulator of a **RUP41** GPCR or a ligand of a **RUP41** GPCR, said method comprising the step of administering the compound to the non-human mammal.